National Institute of Environmental Health Sciences

Impact of drainage networks on cholera outbreaks in Lusaka, Zambia

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Year: 2009
Journal: American Journal of Public Health. 99 (11): 1982-1987

Abstract:

Objectives. We investigated the association between precipitation patterns and cholera outbreaks and the preventative roles of drainage networks against outbreaks in Lusaka, Zambia. Methods. We collected data on 6542 registered cholera patients in the 20032004 outbreak season and on 6045 cholera patients in the 2005-2006 season. Correlations between monthly cholera incidences and amount of precipitation were examined. The distribution pattern of the disease was analyzed by a kriging spatial analysis method. We analyzed cholera case distribution and spatiotemporal cluster by using 2590 cholera cases traced with a global positioning system in the 2005-2006 season. The association between drainage networks and cholera cases was analyzed with regression analysis. Results. Increased precipitation was associated with the occurrence of cholera outbreaks, and insufficient drainage networks were statistically associated with cholera incidences. Conclusions. Insufficient coverage of drainage networks elevated the risk of cholera outbreaks. Integrated development is required to upgrade high-risk areas with sufficient infrastructure for a long-term cholera prevention strategy. (Am J Public Health. 2009;99:1982-1987. doi:10.2105/AJPH.2008.151076)

Source: http://dx.doi.org/10.2105/ajph.2008.151076

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Precipitation, Temperature

Extreme Weather Event: Flooding

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

General Geographical Feature

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Zambia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease, Morbidity/Mortality

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Cholera

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content